

WHAT IS CLAIMED IS:

1 Apparatus for applying a flowable adhesive to se-
2 lected portions of a running web of wrapping material
3 for smokers' products, comprising:
4 at least one source of adhesive;
5 an applicator having at least one adhesive-dis-
6 charging orifice adjacent a course for the running web;
7 means for connecting said at least one source with
8 said applicator; and
9 means for regulating - including interrupting - the
10 flow of adhesive in said connecting means, comprising at
11 least one rotary valve.

1 2. The apparatus of claim 1, wherein said at least
2 one valve includes a valve body and at least one rotor
3 disposed in and having a peripheral surface defining with
4 said body at least one arcuate path for the flow of
5 adhesive from an inlet to an outlet of said at least one
6 valve, said peripheral surface including at least one
7 irregularity arranged to influence the flow of adhesive
8 from said inlet to said outlet.

1 3. The apparatus of claim 2, wherein said at least
2 one irregularity includes at least one of (a) at least
3 one recess, (b) at least one groove, (c) at least one
4 projection, and (d) at least one lobe.

1 4. The apparatus of claim 2, wherein said body
2 includes a housing having a chamber for said at least
3 one rotor.

1 5. The apparatus of claim 1, wherein said applicator
2 has at least one adhesive storing chamber communi-
3 cating with said at least one orifice.

1 6. The apparatus of claim 1, wherein said at least
2 one orifice has at least one parameter, including the
3 depth and the capacity thereof, which is variable to thus
4 influence the quantity of adhesive being applied to the
5 web by said applicator.

1 7. The apparatus of claim 1, wherein said orifice
2 is adjustable.

1 8. The apparatus of claim 1, wherein said
2 applicator has a first width, said at least one orifice
3 has a second width, and at least one of said widths is
4 adjustable.

1 9. The apparatus of claim 1, wherein said
2 applicator has an arcuate web-contacting surface adjacent
3 said course for the web.

1 10. The apparatus of claim 1, further comprising
2 means for varying the pressure of adhesive in said con-
3 necting means.

1 11. The apparatus of claim 1, wherein said applicator includes a plurality of nozzles each having at least one adhesive-discharging orifice adjacent said course for the web, said connecting means including discrete conduits each connecting said at least one source with a different one of said nozzles, and further comprising means for individually selecting the pressure of adhesive in at least two of said conduits.

1 12. The apparatus of claim 1, wherein said applicator includes at least two nozzles each having at least one adhesive-discharging orifice adjacent said course, said connecting means including at least two conduits each connecting said at least one source with a different one of said nozzles, and further comprising means for maintaining the pressure of adhesive in one of said at least two conduits at a value which at least approximates the pressure of adhesive in the other of said at least two conduits.

1 13. The apparatus of claim 12, wherein said connecting means further includes an additional conduit communicating with said at least one source, said at least two conduits having inlets communicating with said additional conduit and said pressure maintaining means including at least one pump disposed in said additional conduit upstream of said inlets of said at least two conduits.

1 14. The apparatus of claim 1, wherein at least a portion of said applicator has a coat of a material opposing accumulations of adhesive on the applicator.

1 15. The apparatus of claim 1, further comprising means for monitoring at least one variable parameter of adhesive on the web.

1 16. The apparatus of claim 1, wherein said monitoring means includes means for ascertaining the quantity of adhesive being applied to the web.

1 17. The apparatus of claim 15, wherein said
2 monitoring means includes means for generating signals
3 denoting the monitored at least one parameter, and
4 further comprising means for adjusting at least one of
5 said source, said applicator, said connecting means and
6 said regulating means as a function of said signals.

1 18. The apparatus of claim 1, wherein said applicator
2 comprises a plurality of nozzles each having at
3 least one orifice and said regulating means comprises
4 a rotary valve for each of said nozzles, each of said
5 valves including a valve body and a rotor disposed in
6 and having a peripheral surface defining with said body
7 at least one arcuate path for the flow of adhesive from
8 an inlet to an outlet of the respective valve, said
9 peripheral surface of each rotor including at least one
10 irregularity arranged to influence the flow of adhesive
11 from the inlet to the outlet of the respective valve.

1 19. The apparatus of claim 18, wherein each of
2 said peripheral surfaces is provided with a plurality
3 of irregularities.

1 20. The apparatus of claim 1, further comprising means
2 for advancing the web along said course at a first speed,
3 means for rotating a rotor of said at least one valve
4 at a second speed, and means for synchronizing the
5 operation of said advancing means with the operation of
6 said rotating means.

1 21. The apparatus of claim 1, comprising at least
2 two sources respectively containing different first and
3 second adhesives, said applicator including first and
4 second nozzles each having at least one orifice adjacent
5 said course for the web and said connecting means
6 including at least one first conduit arranged to convey
7 first adhesive from the respective source to said first
8 nozzle and at least one second conduit arranged to convey
9 second adhesive from the respective source to said second
10 nozzle.

1 22. The apparatus of claim 1, wherein said valve
2 has a hollow stator and a rotor rotatable in said stator
3 about a predetermined axis, said stator and said rotor
4 defining an arcuate groove disposed in a plane normal
5 to said axis and extending from an inlet to an outlet of
6 said valve.

1 23. The apparatus of claim 22, wherein said groove
2 extends along an arc approximating but less than 360°.

1 24. The apparatus of claim 1, wherein said
2 applicator includes a plurality of nozzles each having
3 at least one orifice and each adjacent a different por-
4 tion of said course, said connecting means including a
5 plurality of conduits, at least one for each of said
6 nozzles and each connecting said source with the respect-
7 ive nozzle.

1 25. The apparatus of claim 24, wherein said source
2 includes a plurality of discrete sources of different
3 adhesives, said conduits including at least two conduits
4 connecting one of said discrete sources with the
5 respective nozzles.

1 26. The apparatus of claim 24, wherein said
2 regulating means includes a plurality of valves each
3 having a hollow body and a rotor turnable in the
4 respective body about a predetermined axis, each rotor
5 having a peripheral surface defining with the respective
6 body a path leading to one of said nozzles, said bodies
7 and said rotors cooperating to confine the adhesive to
8 flow to the respective nozzles.

1 27. The apparatus of claim 26, wherein said rotors
2 constitute substantially disc-shaped sections of a rotor
3 which is common to all of said valves, said hollow
4 bodies forming part of a stator common to and surrounding
5 all of said disc-shaped sections, the peripheral surface
6 of each of said disc-shaped sections having at least one
7 irregularity arranged to influence the flow of adhesive
8 within the respective hollow body.

1 28. The apparatus of claim 27, wherein at least
2 one of said disc-shaped sections cooperates with the res-
3 pective hollow body to establish a seal against leakage
4 of adhesive from the respective valve.

1 29. The apparatus of claim 26, wherein said hollow
2 bodies have internal surfaces surrounding said rotor
3 and provided with arcuate grooves for the flow of
4 adhesive along the respective paths, said grooves having
5 centers of curvature on said axis.

1 30. The apparatus of claim 29, wherein at least
2 one of said grooves extends along an arc approximating
3 but less than 360°.

1 31. The apparatus of claim 24, wherein at least
2 one of said nozzles has at least one adhesive-storing
3 chamber communicating with the respective at least one
4 orifice.

1 32. A method of applying adhesive to selected por-
2 tions of one side of a web of wrapping material for
3 smokers' products, comprising the steps of:
4 advancing the web lengthwise along a predetermined
5 course;
6 placing first and second nozzles adjacent the one
7 side of the web in a predetermined portion of said course;
8 establishing first and second sources respectively
9 containing first and second flowable adhesives;
10 conveying adhesives from said first and second
11 sources to said first and second nozzles; and
12 utilizing the first and second nozzles for the
13 application of first and second adhesives to said se-
14 lected portions of one side of the web in said course.

1 33. The method of claim 32, wherein said conveying
2 step includes inducing the flow of first and second
3 adhesives to the respective nozzles along discrete first
4 and second paths.

1 34. The method of claim 32, wherein said utilizing
2 step includes intermittently applying at least one of
3 the adhesives to the one side of the web in said course.

1 35. The method of claim 34, wherein said step of
2 intermittently applying at least one of the adhesives
3 includes regulating the flow of the at least one adhesive
4 by a rotary valve.

1 36. The method of claim 32, wherein said conveying
2 step includes utilizing at least one pump for each of
3 the first and second adhesives.

1 37. The method of claim 32, wherein said conveying
2 step includes conveying the first and second adhesives
3 along discrete first and second paths, and further com-
4 prising the step of introducing at least one additive
5 into the adhesive in at least one of the first and second
6 paths.

1 38. A method of making rod-shaped smokers' pro-
2 ducts wherein a tubular envelope confines smokable
3 material and at least a portion of the envelope consists
4 of a section of a web one side of which is at least
5 partially coated with at least one film of an adhesive,
6 comprising the steps of:

7 advancing the web lengthwise along a predetermined
8 course;

9 establishing at least one source of flowable ad-
10hesive;

11 positioning an orifice of at least one nozzle
12 adjacent a portion of said course at the one side of the
13 web;

14 conveying adhesive along at least one path extend-
15 ing from the at least one source to the at least one
16 nozzle; and

17 regulating the flow of adhesive in said path,
18 including employing at least one rotary valve.

1 39. A method of making rod-shaped smokers'
2 products wherein a tubular envelope confines a smokable
3 material and at least a portion of the envelope consists
4 of a section of a web one side of which is at least
5 partially coated with at least one film of adhesive,
6 comprising the steps of:

7 advancing the web lengthwise along a predetermined
8 course;

9 positioning orifices of at least two nozzles
10 adjacent a portion of said course at one side of the web;
11 establishing at least two sources of flowable ad-
12 hesive; and

13 conveying flowable adhesive from each of the
14 sources along a discrete path to a different one of said
15 nozzles.

1 40. The method of claim 39, further comprising
2 the step of maintaining the adhesives in said paths at
3 different pressures.

1 41. As a novel article of manufacture, a rod-
2 shaped smokable product including a smokable filler and
3 a tubular envelope consisting at least in part of a
4 section of a web having one side at least partially coat-
5 ed with at least one film of adhesive, said at least one
6 film containing at least two different types of adhesive.

1 42. The product of claim 41, wherein at least one
2 of said adhesive types consists at least in part of a
3 combustion retarding material.

1 43. The product of claim 41, wherein at least one
2 of said adhesive types contains at least one flavoring
3 agent.

1 44. The product of claim 41, wherein the filler
2 consists of cigarette tobacco and a filter mouthpiece.

1 45. The product of claim 41, wherein said section
2 is a convoluted uniting band of tipping paper.

1 46. The product of claim 45, wherein the band has
2 a first annular portion at least partially coated with
3 adhesive containing at least one flavoring agent and a
4 second annular portion at least partially coated with
5 adhesive consisting of or containing a combustion retard-
6 ing material.